REMARKS

The present communication accompanies an RCE in response to the final Office Action dated January 27, 2004 in this matter. When the final Office Action was mailed, claims 1-8, 10-18, 20-28, 31-35 and 39-46 were pending. In this paper, claims 1, 11, 20, 31, 32, 34, 35 and 42 have been amended, claims 43-46 have been cancelled, and claims 47-90 have been added. Accordingly, claims 1-8, 10-18, 20-28, 31-35, 39-42 and 47-90 are now pending.

In the final Office Action dated January 27, 2004, the then-pending claims were objected to and/or rejected. More specifically, the status of the application in light of the final Office Action is as follows:

(A) Claims 32 and 42 stand objected to on the basis of informalities;

(B) Claims 31-35 stand rejected under 35 U.S.C. Section 112, second paragraph;

(C) Claims 1-8, 10-18 and 20-28 stand rejected under 35 U.S.C. Section 102(e) as being anticipated by U.S. Patent No. 6,099,702 to Reid et al. ("Reid");

(D) Claims 39-42 stand rejected under 35 U.S.C. Section 102(e) as being anticipated by U.S. Patent No. 6,391,166 to Wang ("Wang");

(E) Claims 1-5, 8, 10, 20, 22 and 24 stand rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 6,416,647 to Dordi et al. ("Dordi");

(F) Claims 31-35 and 39-42 stand rejected under 35 U.S.C. Section 103(a) as being unpatentable over Reid in view of Wang; and

(G) Claims 43-46 stand rejected under 35 U.S.C. Section 103 as being unpatentable over Reid in view U.S. Patent No. 6,156,167 to Patton et al. ("Patton") and/or over U.S. Patent No. 6,280,581 to Cheng ("Cheng") in view of Wang.

A. Response to the Objections to Claims 32 and 42

To provide consistency between claims 31 and 32, both claims have been amended to include the phrase "fluid collector system." The phrase "central system" in claim 42 has been changed to "control system." Accordingly, the objections to claims 32 and 42 should be withdrawn.

B. Response to the Section 112 rejections of claims 31-35

Claims 31-35 were rejected under 35 U.S.C. § 112, second paragraph as failing to include antecedent basis for aspects of these claims. The claims have been amended without narrowing the scope of the claims to provide such bases and, accordingly, the Section 112 rejections of these claims should be withdrawn.

C. Response to the Section 102 Rejections on the Basis of Reid

Claims 1-8, 10-18 and 20-28 were rejected under 35 U.S.C. § 102(e) as being anticipated by Reid. Claim 1 is directed to an apparatus for processing a microelectronic workpiece, and includes a workpiece support configured to hold the microelectronic workpiece, a processing container configured to receive the workpiece held by the support, and a drive mechanism connected to drive at least one of the container and the support relative to the other. A first chemical delivery system provides a processing fluid to the workpiece when the workpiece is in one position, and a second chemical delivery system provides a spray of processing fluid when the workpiece is in a second position. First and second chemical collector systems collect processing fluid while the workpiece is in the first and second processing positions, respectively. A control system is operatively coupled to the drive mechanism and is "programmed with instructions that direct the drive mechanism to move the workpiece support during application of the spray from the second chemical delivery system so as to vary the radial position of [an] initial contact between the spray and the microelectronic workpiece." Accordingly, the spray from the second chemical delivery system can be automatically scanned across the surface of the workpiece under the direction and control of the programmed control system.

Reid discloses an apparatus for applying a spray to a microelectronic workpiece, but fails to disclose a control system programmed with instructions that carry out the foregoing directions. For example, Reid fails to disclose a control system "programmed with instructions that direct the drive mechanism to move the workpiece support during application of the spray from the second chemical delivery system so as to vary the radial position of [an] initial contact between the spray and the microelectronic workpiece." Accordingly, the Section 102 rejection of claim 1 on the basis of Reid should be withdrawn.

Claims 2-8 and 10 depend from claim 1. Accordingly the Section 102 rejections of these claims on the basis of Reid should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

Independent claims 11 and 20 have been amended to include features generally similar to those described above with reference to claim 1. Accordingly, the Section 102 rejections of these claims, as well as claims depending therefrom (claims 12-18 and 21-28, respectively) should be withdrawn for the reasons discussed above and for the additional features of these claims.

D. Response to the Section 102 Rejections of Claims 39-42

Claims 39-42 were rejected under 35 U.S.C. § 102(e) as being anticipated by Wang. Claim 39 is directed to an apparatus for processing a microelectronic workpiece and includes a workpiece support configured to hold a microelectronic workpiece, a processing vessel configured to receive the workpiece held by the support, and a drive system coupled to the workpiece support to move the support along a first axis relative to the processing vessel between a first position and a second position. The drive system is further configured to tilt the workpiece relative to the vessel about a second axis generally transverse to the first axis. A fluid delivery system is positioned to direct at least one stream of processing fluid toward the workpiece to impinge on the workpiece while the workpiece is supported by the workpiece support. Accordingly, the

fluid delivery system can direct the stream of processing fluid toward the workpiece while the workpiece is supported in a tilted orientation.

Wang discloses an apparatus for tilting a workpiece so as to engage a peripheral edge of the workpiece in contact with a plating bath (see Figures 61 and 66 and the associated text at column 40, lines 52-58 and column 41, lines 25-31). However, Wang fails to disclose or suggest "a fluid delivery system positioned to direct at least one stream of processing fluid toward the workpiece support to impinge on a microelectronic workpiece while the workpiece support holds the microelectronic workpiece," as recited in claim 39. Therefore, the Section 102 rejection of claim 39 on the basis of Wang should be withdrawn.

Claims 40-42 depend from claim 39. Accordingly, the Section 102 rejections of these claims should be withdrawn for the foregoing reasons and for the additional features of these dependent claims.

E. Response to the Section 103 Rejections on the Basis of Dordi

Claims 1-5, 8, 10, 22 and 24 were rejected under 35 U.S.C. Section 103(a) as being obvious in light of Dordi. As discussed above, claim 1 includes a control system "programmed with instructions that direct the drive mechanism to move the support during application of the spray so as to vary the radial position of the initial contact between the spray and the microelectronic workpiece." Dordi discloses a cell having rinse spouts for face-up processing of semiconductor substrates, but, as stated by the Examiner in the Final Office Action, Dordi fails to disclose a control system to direct a drive mechanism that moves a workpiece support. Instead, Dordi simply discloses an apparatus that applies a rinsing spray to a workpiece. Even if Dordi did disclose or suggest a control system, Dordi fails to disclose or suggest a control system "programmed with instructions that direct the drive mechanism to move the support during application of the spray so as to vary the radial position of the initial contact between the spray and the microelectronic workpiece." In fact, Dordi appears to teach away from such a feature. For example, Dordi states at col. 14, lines 9-13 (with

reference to Figure 12) that "[a]t the rinsing position, the substrate support member 204 is positioned below a horizontal plane defined by the rinse spray spouts 260 but above a horizontal plane defined by the tip of the rinse catch cup 264." Accordingly, this arrangement appears to significantly limit the possible locations at which the substrate can be placed during rinsing. This is in direct contrast to the features of claim 1, which include a controller programmed not only to move the workpiece support during spray application, but to move it "so as to vary the radial position of the initial contact between the spray and the microelectronic workpiece." Accordingly, the Section 103 of claim 1 should be withdrawn.

Claims 2-5, 8 and 10 all depend from claim 1 and accordingly, the Section 103 rejections of these claims should be withdrawn for the foregoing reasons and for the additional features of these claims. Independent claim 20 has been amended to include features generally similar to those of claim 1 and accordingly, the Section 103 rejection of claim 20 on the basis of Dordi should be withdrawn for the reasons discussed above and for the additional features of claim 20. Claims 22 and 24 depend from claim 20 and accordingly, the Section 103 rejections of these claims should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

F. Response to the Section 103 Rejections on the Basis of Reid and Wang

Claims 31-35 and 39-42 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Reid in view of Wang. Reid fails to disclose a drive system coupled to a workpiece support to "move the workpiece support along a first axis relative to the processing vessel" and "tilt the workpiece support relative to the vessel about a second axis generally transverse to the first axis." As discussed above, Wang fails to disclose at least one feature of claim 39, e.g., "a fluid delivery system positioned to direct at least one stream of processing fluid toward the workpiece support to impinge on a microelectronic workpiece while the workpiece support holds the microelectronic workpiece." Nor would one be motivated by Reid's disclosure to replace his generally horizontally disposed workpiece support with a tilting workpiece support. In fact, Reid teaches a way from such an arrangement. Reid teaches "completely and

simultaneously" covering the wafer with water during rinsing (Reid at column 3, lines 63-64) using a nozzle that "covers the full radius of the wafer W," (Reid at column 4, lines 15-16). Accordingly, Reid teaches a way from an arrangement (such as that taught by Wang) where only a peripheral portion of the wafer is contacted with fluid by tilting the wafer. Therefore, the Section 103 rejection of claim 39 should be withdrawn.

Claims 31-35 and 40-42 depend from claim 39. Accordingly, the Section 103 rejections of these claims should be withdrawn for the reasons discussed above and for the additional features of these dependent claims.

G. Response to the Section 103 Rejections of Claims 43-46

Claims 43-46 have been cancelled and accordingly, the Section 103 rejections of these claims are now moot.

H. New Claims 47-90

New claims 47-90 are all directed to methods and apparatuses having features that are neither disclosed nor suggested by the applied references. For example, independent claims 47 and 56 include, *inter alia*, a fluid collector system having first and second annular channels that are in fluid communication with each other. New claim 65 is directed to a method for processing a microelectronic workpiece that includes directing a stream of processing fluid toward the workpiece to strike the workpiece at a first radial location, and then moving the workpiece relative to the stream so that the stream strikes the microelectronic workpiece in a second, different radial location. Independent claim 73 is directed to a method for processing a microelectronic workpiece that includes tilting the workpiece to change an angle between a face of the workpiece and a fluid stream orifice, and directing a stream of processing fluid from the orifice toward the workpiece to strike the workpiece. Independent claim 83 is directed to a method for processing a microelectronic workpiece that includes cleaning at least one electrical contact used to electrochemically process the workpiece. Cleaning can be accomplished by directing a stream of rinsing fluid at the at least electrical contact while the at least one electrical contact is spaced apart from the microelectronic workpiece.

New claim 88 is directed to an apparatus for processing microelectronic workpieces formed by a process that includes programming a programmable computer to move at least one of the workpiece support and a container configured to receive processing fluid relative to the other. This movement increases and decreases a distance between the workpiece support and a nozzle while the nozzle directs a stream of processing fluid.

I. Conclusion

In view of the foregoing, the claims pending in the application comply with the requirements of 35 U.S.C. § 112 and patentably define over the applied art. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-3257.

Respectfully submitted,
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